SUBJECT INDEX

Accessory olfactory system 276
  components and connections 277, 596
  distribution of gonadal steroid receptors 277
  sexual dimorphisms 279
Acetylcholine
  modulation of calcium current in parasympathetic ganglia 502
  effect on MS–DB neurons 543, 551, 552, 554
  response of dorsolateral septal nucleus neurons 386, 390
  synaptic transmission in parasympathetic ganglia 481
Acetylcholine receptors
  dorsolateral septal nucleus neurons 386, 389, 390
  parasympathetic ganglia 481, 482, 485, 502
  vestibular nucleus complex 342
Adaption, motor unit, effects of ageing 446
Adenosine
  effect on cholinergic transmission in parasympathetic ganglia 493
  K^+ conductance and sleep 349
  modulation of calcium current in parasympathetic ganglia 502
  release and depletion of cerebral glycogen stores during sleep 356
Adenosine-3′, 5′-monophosphate, signal transduction in olfactory sensory neurons 593
Adenosine receptors, dorsolateral septal nucleus neurons 389
Ca^{2+}-Adenosine triphosphatase, skeletal muscle, effects of ageing 442
Adenosine triphosphate, pre-synaptic modulation in parasympathetic ganglia 495
α-Adrenoceptors
  dorsolateral septal nucleus neurons 388
  integration of ganglionic transmission 506
Ageing
  dentition 203
  memory dysfunction, hippocampal markers 223–252
    electrophysiological 227
    structural 231
  motor unit 397–458
    denervation and reinnervation 447
    end plate 434
    enzyme- and immunohistochemical characteristics 418
    morphology and muscle fibres 424
    motoneurone 428
    motor unit organisation 402
    physiological properties 438
    secondary influences 448
    techniques 399
Airway motility, sensory neuropeptides 31
Airway secretions, sensory neuropeptides 34
Amines, responses in dorsolateral septal nucleus neurons 387
trans-D, L-1-Amino-1,3-cyclopentane-dicarboxylic acid, excitatory transmission in dorsolateral septal nucleus 381
Ammon's horn, sexual dimorphisms 292
Amygdala
  estrogen-accumulating cells 277
  sexual dimorphisms 280
Androgen receptors
  accessory olfactory system 279
  hippocampal formation 287
  hypothalamus 306
Anteroventral periventricular nucleus, sexual dimorphisms 301
Arcuate nucleus, sexual dimorphisms 307
Artificial Intelligence (AI) 100, 113
Attention, theta rhythm 570
Attractor neural network
  generation of long sequences in behaviour 371
  modelling motor systems 368
  time frames 370
Autocorrelation histograms, theta-modulation 525

Bed nucleus of the accessory olfactory tract, sexual dimorphisms 280
Bed nucleus of the stria terminalis, sexual dimorphisms 283
Behaviour
  modelling neuronal activity 361
    frame/content model 367
    modelling the time frames as an attractor neural network 368
    time frame description 362
    time frames and functional levels in nervous system 366
  sexual dimorphism in the limbic system 319
  teeth 166
  theta rhythm 570
Biliary tract, sensory neuropeptides 41
Biocytin, dorsolateral septal nucleus neurons 381
Bladder, sensory neuropeptides 44, 62
Blood flow, sensory neuropeptides 25
  dental pulp 196
  skin 51
Blood vessels, effect of tachykinins and calcitonin gene-related peptide 25
Bone, sensory neuropeptides 56
Brain
  cerebrovascular responses to capsaicin, tachykinins and calcitonin gene-related peptide 27
  computer systems 99–127
    development 119
    hierarchies of the CNS 121
    mechanisms of memory 120
    parallel processing and simulation 123
    processes associated with consciousness 122
Brainstem, regulation of theta rhythms 538, 563
Bronchial ganglia
  histochemistry and immunochemistry 466
  structure 463
Bronchoconstriction, sensory neuropeptides 31

Calcitonin gene-related peptide
  dental pulp 191, 196
  modulation of calcium current in parasympathetic ganglia 504
  peridontal axons 203, 207
  primary afferent neurons
    biological actions 19
    co-localisation with tachykinins 4, 61
    inflammation 11

nerve growth factor and expression of 9
nerve injury 10
neuroeffector roles 24, 31, 36, 42, 50, 52, 53, 55, 57, 58
plasticity of expression 7
receptors and receptor antagonists 23
release from peripheral endings 13
synthesis and expression 4
rodent incisors 182
Calcium
parasympathetic ganglia 468, 470
sensory neuropeptide release from capsaicin-sensitive primary afferent neurons 14
transport in skeletal muscle, effects of ageing 442
Calcium currents, parasympathetic ganglia neurons 473
modulation 502
Capsaicin, protection against gastric ulcers 39
Capsaicin-sensitive primary afferent neurons (CSPANs)
calcitonin gene-related peptide receptors 23
calcitonin gene-related peptide synthesis 4
co-localisation of tachykinins and calcitonin gene-related peptide 4
physiological interaction and significance 61
functional anatomy 2
interaction of released peptides 60
inflammation 11
interaction with sympathetic nerves 8
nerve growth factor and expression of sensory neuropeptides 9
nerve injury 10
neuroeffector roles of sensory neuropeptides released from cardiovascular system 24
dura meter 56
eye 52
gastrointestinal system 36
genitourinary system 42
joints and bones 55
lymphoid organs and immunocytes 57
mast cells 58
respiratory system 31
skeletal muscle 53
skin 50
pharmacology of efferent function 70
plasticity of neuropeptide expression 7
release of sensory neuropeptides from peripheral endings 13
tachykinin synthesis 4
tachykinin receptors and receptor antagonists 21
tissue levels of sensory neuropeptides and efferent function 6
Capsazepine 15
Cardiac ganglia
electrophysiological properties 468, 470
histochemistry and immunochemistry 466
structure 463
synaptic transmission 482
types of neurons 472
voltage-dependent currents 472
Cardiovascular system, effect of tachykinins and calcitonin gene-related peptide 24
Catecholamines, effect on cholinergic transmission in parasympathetic ganglia 490, 494
Catecholamine receptors, dorsolateral septal nucleus neurons 387
Cerebral arteries, effects of capsaicin, tachykinins and calcitonin gene-related peptide 27
Chinese Room 101
Chloride channels, parasympathetic ganglia 476
Cholinergic modulation of MS–DB neuronal activity 543, 551, 552, 554, 558, 568, 572
Cholinergic receptors, dorsolateral septal nucleus neurons 386, 390
Cholinergic transmission, parasympathetic ganglia, modulation 489
adenosine 493
ATP 495
cyclic GMP 501
endothelin 494, 498
enkephalin 492, 498
GABA 496
galanin 497
5-HT 491, 496
nitric oxide 499
noradrenaline 490, 494
recruitment 506
vasointestinal polypeptide 497
Ciliary ganglia
electrophysiological ganglia 469
histochemistry and immunochemistry 465
structure 462
voltage-dependent currents 473, 475
Classical conditioning, age-dependent deficits 227
Cognitive map theory 269
Colonic ganglia, structure 464
Complex-spike cells 256
Computers, can they think? 99, 124
brain processes 119
computer systems 104
items of information 106
mental phenomena
consciousness 116
intentionality 115
thinking and algorithms 119
understanding 118
programs 104, 107
Searle's demonstration 100
Chinese Room 101
simulations 109
brains 111, 123
physical systems 110
Consciousness 116
brain processes associated with 122
Corticosteroid receptors, brain 131
Corticosteroids
effect of brain implants on hypothalamo-pituitary–adrenocortical responses 129
effect of hypothalamic deafferentation and limbic lesions on negative feedback 132
role of noradrenaline and 5-HT in feedback regulation 133
effect on single cell activity in hypothalamus 134
Corticotropin releasing factor-41 129, 130, 132, 139
CP 96,345 22
Cricket courtship 362, 363
Cues, hippocampal place cells 261

Delta-modulation, limbic system 527
Dendritic development, differentiation of dentate granule cells 151, xv

Denervation–reinnervation, age-related in skeletal muscle 447
Dentate granule cells, differentiation 148, xii
Dentate gyrus
  long-term potentiation, ageing 228
  place cells 263
  sexual dimorphism 288
Dentin, pain 192
Dentinal injuries 206
Development
  sexual dimorphism in the limbic system 319
  teeth and tooth nerves 170, 174
Dexamethasone, effect of brain implants on hypothalamo-pituitary–adrenocortical axis 129
Dimethylphenylpiperazinium, response in dorsolateral septal nucleus neurons 386
Disector 232, 235
Dopamine, responses in dorsolateral septal nucleus neurons 388
Dopamine receptors, vestibular nucleus complex 341
Dorsal root ganglion
  co-localisation of tachykinins and calcitonin gene-related peptide in capsaicin-sensitive neurons 4
  inflammation and expression of sensory neuropeptides 11
  nerve growth factor and expression of sensory neuropeptides 9
Dorsolateral septal nucleus 373
  electrophysiological properties and cellular morphology of neurons 378
  excitatory transmission 383
  inhibitory synaptic transmission 381
  membrane responses to non-amino acids 385
  preparation and methodology 376
  role within septo-hippocampal pathway 391
Dura mater, sensory neuropeptides 56

Enamel 166, 173
Endothelin
  calcium current modulation in parasympathetic ganglia 503
  effect on cholinergic transmission in parasympathetic ganglia 494
  post-synaptic modulation in parasympathetic ganglia 498
Endothelium-dependent vasodilation
  calcitonin gene-related peptide 19, 26
  tachykinins 18, 26
End plate, effects of ageing 434
Energy metabolism, restoration of and sleep 347–360
Enkephalin
  effect on cholinergic transmission in parasympathetic ganglia 492
  integration of synaptic transmission 508
  post-synaptic modulation in parasympathetic ganglia 498
Entorhinal cortex, place cells 263
Environment, sexual dimorphism in hippocampal formation 291
Excitatory amino acid receptors, vestibular nucleus complex 340, 341, 344
Excitatory post-synaptic potentials, parasympathetic ganglia 481
Excitatory transmission, dorsolateral septal nucleus 383
Eye, sensory neuropeptides 52

Fatigue, skeletal muscle, effects of ageing 445
Feeding, teeth 170
Food restriction, ageing 451

GABA
  post-synaptic modulation in parasympathetic ganglia 496
  synaptic transmission in dorsolateral septal nucleus 381, 390
GABAergic components of septo-hippocampal input 568, 572
$GABA_A$ receptors, vestibular nucleus complex 341
Galanin
  calcium current modulation in parasympathetic ganglia 503
  post-synaptic modulation in parasympathetic ganglia 497
Gallbladder, sensory neuropeptides 41
Gastric acid secretion, sensory neuropeptides 21, 38
Gastric blood flow, sensory neuropeptides 28, 38
Gastric ulcers, sensory neuropeptides 38
Gastrointestinal system, sensory neuropeptides 36
Genitourinary system, sensory neuropeptides 42
Glomerulus, olfactory processing 599
Glucocorticoid receptors, brain 131
Glutamate, synaptic transmission in dorsolateral septal nucleus 383
Glycogen, metabolism and sleep 352–356
Goals, place cells 262
Gonadal steroid receptors
  accessory olfactory system 277
  hippocampal formation 287
  hypothalamus 306
  pre-optic area 294
  sexual dimorphism and development 319
G proteins
  odor receptor protein coupling 590, 593
  parasympathetic ganglia 505
Granulocytes, tachykinins 19
Growth hormone, skeletal muscle and ageing 450
Guanosine-3′,5′-monophosphate, effect on parasympathetic neurones 501

Heart, effect of tachykinins and calcitonin gene-related peptide 24
Hippocampal formation 253
  components and connections 281
  distribution of gonadal steroid receptors 287
  formation of specific projections in slice cultures 154, xviii
  markers of age-related memory dysfunction 223–252
    electrophysiological 227
    structural 231
  neuroanatomy 254
  neuronal differentiation in slice cultures 148, xii
  place cells 254
    behaviourally defined goals 262
    cue control 261
    directionality 257
    genesis and stability 256
    locomotor behaviour 264

long-term potentiation 270
memory 259
primates 265
spatial firing 263
preparation of slice cultures 144, viii
sexual dimorphism 288
theta rhythm 376, 523–583
Hippocampal/septal pathway, role of dorsolateral septal nucleus 375, 391
Histamine receptors, vestibular nucleus complex 342
Hormones, skeletal muscle and ageing 448
5-Hydroxytryptamine
effect on cholinergic transmission in parasympathetic ganglia 491
post-synaptic modulation in parasympathetic ganglia 496
responses in dorsolateral septal nucleus neurons 388, 390
role in HPA axis regulation 134
5-Hydroxytryptamine receptors
dorsolateral septal nucleus neurons 388
vestibular nucleus complex 341
Hypothalamo-pituitary–adrenocortical axis
effect of corticosteroid brain implants 129
effect of corticosteroids on single cell activity in hypothalamus 134
effect of hypothalamic deafferentations and limbic lesions on corticosteroid feedback 132
role of corticoid receptors 131
role of noradrenaline and 5-HT in corticosteroid feedback regulation 133
Hypothalamus
components and connections 302
distribution of gonadal steroid receptors 306
sexual dimorphisms 307

Ibotenic acid, lesions of septal nuclei 376
Immunocytes, sensory neuropeptides 57
Inflammation
pulpal axons 196
sensory neuropeptides in primary afferent neurons 11, 19
skin 50
Inhibitory amino acid receptors, vestibular nucleus complex 341
Inhibitory synaptic transmission, dorsolateral septal nucleus 381
Intentionality 115
Inward rectifier current, parasympathetic ganglia 476
Ionotropic excitatory transmission, dorsolateral septal nucleus 383
Ionotropic inhibitory transmission, dorsolateral septal nucleus 381
Ion transport, tachykinins 40
Isometric twitch, ageing 443

Joints, sensory neuropeptides 55

Kindling, hippocampus 228
age-dependent alterations 230

Learning
age-dependent deficits 227
hippocampus 254
Limbic lesions, effect on corticosteroid negative feedback 132
Limbic system
sexual dimorphism
accessory olfactory system 276
behaviour 319
development 319
hippocampal formation 284
hypothalamus 302
methodology 316
pre-optic area 293
theta modulation 524
Liver
CSPANs and blood flow 28
sensory neuropeptides 41
Lobeline 386
Locomotor behaviour, place cell firing 264
Long-term depression
theta cell firing rates 264
vestibular nucleus complex 343
Long-term potentiation
dorsolateral septal nucleus synapse 385
hippocampus 227
age-dependent deficits 228, 245
place cells 270
theta rhythm 376, 572
vestibular nucleus complex 343
Lucifer Yellow, dorsolateral septal nucleus neurons 381
Luteinizing hormone releasing hormone neurons, sexual dimorphism 301
Lymphocytes, sensory neuropeptides 57
Lymphoid organs, sensory neuropeptides 57

Mast cell degranulation
sensory neuropeptides 58
substance P 19
M-current, parasympathetic ganglia, modulation 505
Medial pre-optic nucleus, sexual dimorphisms 298
Medial septum–diagonal band of Broca (MS–DB) 374, 386, 391
theta rhythm 524, 530, 532, 535, 562
cholinergic modulation 543, 568
control of 538
GABAergic components 568, 572
functional significance 551, 554
Medial vestibular nucleus, *in vitro* electrophysiology 336, 338–344
Membrane oscillations, parasympathetic neurones 476
Memory
age-related dysfunction, hippocampal markers 223–252
electrophysiological 227
neuron loss 232, 243
recently-acquired 226
spatial 224
synapse loss 237
consciousness 117
mechanisms 120
place cells 259
theta rhythms 375, 551, 570
Mental phenomena 115
Metabotropic excitatory transmission, dorsolateral septal nucleus 383
Metabotropic inhibitory transmission, dorsolateral septal nucleus 382
N-Methyl-D-aspartic acid receptors
dorsolateral septal nucleus 383
vestibular nucleus complex 341, 344

Mineralocorticoid receptors, brain 131
Mitral cells 590, 602, 611
Mnemonic functions, hippocampus, age-dependent impairments 224
Mossy fibre system 154, xviii
  sexual dimorphism 292
Motoneurone, effects of ageing 428
Motor systems, time frames and analysis of 366
Motor unit, effects of ageing 397–458
  denervation and reinnervation 447
  end plate 434
  enzyme- and immunohistochemical characteristics 418
  morphology of muscle fibres 424
  motoneurone 428
  organisation 402
  physiological properties 438
  secondary influences 448
  techniques 399
Movement, modelling neuronal activity 361–371
Muscarinic receptors
  dorsolateral septal nucleus neurons 387, 390
  parasympathetic ganglia, modulation of calcium current 502
  vestibular nucleus complex 342
Muscle, effects of ageing 397–458

Navigation, spatial representation 270
Nerve growth factor
  expression of sensory neuropeptides 9
  effect on MS–DB cells 570
  odontogenesis 181
Nerve injury, tachykinins and calcitonin gene-related peptide 10
Neural cell adhesion molecule, odontogenesis 179
Neurogenic inflammation 64, 198
Neurokinin A
  dental pulp circulation 196
  primary afferent neurons
    bronchoconstriction 32
    co-localisation with calcitonin gene-related peptide 4
    release from peripheral endings 13
    synthesis 3
Neurokinin receptors 18
  antagonists 21
Neuromodulation, calcitonin gene-related peptide 19
Neurons
  hippocampal slice cultures 144, viii
    differentiation 148, xii
    formation of specific projections 154, xviii
  hippocampus
    firing properties 253–274
    loss during ageing 232, 243
    theta rhythm 523–583
Neuropeptide K, in primary afferent neurons 3
Neurotropin receptors, odontogenesis 181
Nicotinic receptors
  dorsolateral septal nucleus neurons 386
  parasympathetic ganglia 481, 482, 485
  vestibular nucleus complex 342
Nitric oxide, effect on parasympathetic ganglia neurons 499
Noradrenaline
  calcium current modulation in parasympathetic ganglia 502
  effect on cholinergic transmission in parasympathetic ganglia 490
  post-synaptic modulation in parasympathetic ganglia 494
  response in dorsolateral septal neurons 388
  role in corticosteroid feedback regulation 133
  slow HSP in parasympathetic ganglia 487
Noradrenaline receptors, vestibular nucleus complex 341
Noradrenaline nerves, interaction with capsaicin-sensitive primary afferent neurons 8

Odontoblasts 192
Odontogenesis 170
Odor molecules 586, 602
Odor receptor proteins 590
  molecular receptor ranges 605
  in olfactory epithelium, zonal distribution 591
  selection by individual olfactory sensory neurons 593
Oestrogen, ageing 450
Oestrogen receptors
  accessory olfactory system 277
  hippocampal formation 287
  hypothalamus 306
  pre-optic area 294
Olfactory bulb 589, 594
  glomerulus 599
  organisation of olfactory nerve projection to 595
  processing of molecular information 601
    mitral/tufted cells 602
    role of local circuits 608
    spatial representation of molecular receptive range properties 607
Olfactory epithelium
  odor receptor proteins 591
  structure 587, 589
Olfactory sensory neurons, selection of odor receptor proteins and signal transduction 593
Olfactory system, molecular recognition and processing 585–619
  anatomy 588, 589
  glomerulus 599
  molecular receptive ranges 601, 614
  odor molecules 586
  odor receptor proteins 590
  sending information to olfactory bulb 594
Opioid receptors, vestibular nucleus complex 342
Optical fractionator 236
Orienting exploratory activity, theta rhythm 571
Otic ganglia
  histochemistry and immunochemistry 466
  structure 463

Pain, teeth and tooth nerves 192
Pancreas, sensory neuropeptides 41
Pancreatic ganglia
  histochemistry and immunochemistry 466
  structure 464
  types of neurones 472
Parallel processing, brain simulation 123
Parastriatal nucleus, sexual dimorphisms 300
Parasympathetic ganglia 459–522
  electrophysiological properties 467
  histochemistry and immunochemistry 465
  integration of ganglionic transmission 506
  membrane oscillations 476
  modulation of synaptic transmission 489
  modulation of voltage-dependent currents 502

post-synaptic potentials 481
structure 462
Paratracheal ganglia
electrophysiological properties 469
histochemistry and immunochemistry 466
structure 463
Paraventricular nucleus, sexual dimorphisms 312
Pelvic ganglia
electrophysiological properties 468, 469, 471
histochemistry and immunochemistry 467
modulation of cholinergic transmission 490, 492
post-synaptic potentials 482
structure 464
voltage-dependent currents 475
Peptide receptors, vestibular nucleus complex 342
Peridontal axons
microscopic anatomy 198
neuropeptides and neural growth factors 203
neurophysiology 201
reflexes and receptors 202
rodent incisor 182
Pertussis toxin, utilization to distinguish receptors and their coupling to effectors 378
Physostigmine, effect on MS–DB neuronal activity 543, 551, 552, 554
Place cells 254
behaviourally defined goals 262
cue control 261
directionality of fields 257
genesis and stability of fields 256
locomotor behaviour 264
long-term potentiation 270
memory 259
primates 265
spatial firing 263
Plasma protein extravasation
calcitonin gene-related peptide 20, 30, 48
tachykinins 18, 30, 48
Plasticity, vestibular compensation 342
Post-synaptic inhibitory responses, dorsolateral septal nucleus neurons 386
Potassium conductance, sleep 349
Potassium current, parasympathetic neurons 473
Pre-optic area 293
components and connections 294
distribution of gonadal steroid receptors 294
sexual dimorphisms 298
Progesterone receptor, in accessory olfactory system 279
Pteryopalatine ganglia
histochemistry and immunochemistry 466
structure 462
Pulmonary arteries, sensory neuropeptides 29
Pulpal axons
general organisation 186
rodent incisor 182
structural and functional properties 189
Pulpal injuries 206
Purinergic receptors, parasympathetic ganglia 488, 495

Rache nuclei, influence on MS–DB neurons 539, 564
Receptor operated channels, vestibular nucleus complex 340, 343
Resiniferatoxin, induced vasorelaxation 27
Respiratory system, sensory neuropeptides 31
Reticular formation, influence on MS–DB neurons 538, 563
RP 67,580 22

Salivary secretion, tachykinins 19
Sarcoplasmic reticulum, skeletal muscle, effects of ageing 442
Secretions
calcitonin gene-related peptide 21, 34
tachykinins 19, 34
Septal nuclei, neuron activity 373
Septo-hippocampal pathway
neuronal theta rhythm 375
control of 538
functional significance 551, 571
role of dorsolateral septal nucleus 375, 391
Sexual dimorphism, limbic system
accessory olfactory system 279
behaviour 319
development 319
hippocampal formation 288
hypothalamus 307
methodology 316
pre-optic area 298
Short-term exploratory modulation of hippocampal activity 270
Signal transduction
olfactory sensory neurons 593
parasympathetic ganglia 505
Simulations 109
brain 111, 123
Skeletal muscle, sensory neuropeptides 21, 53
Skin, sensory neuropeptides 50
Sleep, function of 347
adenosine and K^+ conductance 349
adenosine release and depletion of cerebral glycogen stores 356
glycogen and cerebral energy homeostasis 352
modulation of EEG slow wave activity 348
Slow wave activity, sleep 348
Smooth muscle contraction, tachykinins 18
Smooth muscle relaxation, calcitonin gene-related peptide 20
Sodium current, parasympathetic neurons 472
Soleus, motor unit, ageing 410, 412
Somatostatin, modulation of calcium current in parasympathetic ganglia 504
Somatostatin receptor, dorsolateral septal nucleus neurons 388
Space, representation in primate hippocampus 265
Spantide I 21
Spatial firing, theta cells 263
Spatial memory, hippocampus 256, 258
age-related decline 224
Spatial representation and navigation 270
Spontaneous depolarisation and hyperpolarisation, parasympathetic neurons 477
Submandibular ganglia
electrophysiological properties 169
histochemistry and immunochemistry 466
structure 462
Substance P
dental pulp 191, 196
peridontal axons 203
primary afferent neurons
axonal transport 5
biological actions 18
bronchoconstriction 32

co-localisation with calcitonin gene-related peptide 4
gallbladder 41
immune system 58
joints and bone 55
mast cell degranulation 58
nerve growth factor and expression of 9
release from peripheral endings 13
skin 50
synthesis 3
tissue levels and efferent function 6
vasorelaxation 27
Summation and potentiation, sensory neuropeptides 63
Suprachiasmatic nucleus, sexual dimorphisms 311
Supraoptic nucleus, sexual dimorphisms 312
Sympathetic nerves, interaction with primary afferent neurons 8
Synapses, hippocampal formation
age-related loss 238
memory decline during ageing 242
quantification 237
sexual dimorphism 293
Synaptic connections, hippocampal slice cultures 154, xviii
Synaptic plasticity, age-dependent deficits 227
Synaptic transmission
dorsolateral septal nucleus 381
parasympathetic ganglia 461, 481
integration 506
modulation of voltage-dependent currents 502
pre-synaptic modulation of cholinergic transmission 489
post-synaptic modulation 494
skeletal muscle, effects of ageing 438

Tachykinins, primary afferent neurons
axonal transport 5
biological actions 18
co-localisation with calcitonin gene-related peptide 4
physiological significance 61
inactivation 60
inflammation 11
nerve growth factor and expression of 9
nerve injury 10
neuroeffector roles
cardiovascular system 24
eye 52
gastrointestinal system 36
genitourinary system 42
joints and bones 55
lymphoid organs and immunocytes 57
mast cells 58
respiratory system 31
skeletal muscle 53
skin 50
plasticity of expression 7
receptors and receptor antagonists 21
release from peripheral endings 13
synthesis and expression 3
tissue levels and efferent function 6
Teeth and tooth nerves 165
ageing dentition 203
behaviour 166
evolution 166
mature periodontium 198
mature tooth pulp 186
circulation 196
ontogenesis 170
pathological and experimental de- and regeneration of dental axons 205
pulpal axons
general organisation 186
inflammation 196
injury 206
pain 192
regeneration 206
rodent incisor 182
structural and functional properties 189
Theta cells, spatial specificity of firing 263
Theta rhythm 523–583
general characteristics 524
functional significance for information processing in hippocampus 551
localisation of the source 530
medial septum–diagonal band 524, 530, 532, 535, 538, 551, 554, 562
septal neurons 375, 376
control of 538
Thinking, computers 99–127
Thymus, sensory neuropeptides 57
Thyroid hormones, skeletal muscle and ageing 448
Tibialis anterior, motor unit, ageing 410, 418
Time frame, modelling neuronal activity underlying behaviour 362–371
Tufted cells 590, 602

Understanding 118
Urinary tract, sensory neuropeptides 42, 67
Uterus, sensory neuropeptides 49

Vas deferens, sensory neuropeptides 49
Vasoactive intestinal polypeptide, post-synaptic modulation in parasympathetic ganglia 497
Vasodilation
calcitonin gene-related peptide 19, 26
dental pulp, sensory neuropeptides 196
tachykinins 18, 26
Vasopressinergic innervation, bed nucleus of stria terminalis, sexual dimorphisms 284
Ventral pre-mammillary nucleus, sexual dimorphisms 311
Ventromedial nucleus, sexual dimorphisms 307
Vesical pelvic ganglia
electrophysiological properties 468, 469, 471
histochemistry and immunochemistry 467
integration of transmission 506
modulation of cholinergic transmission 490, 492
post-synaptic potentials 482
structure 464
types of neurons 472
voltage-dependent currents 475
Vestibular compensation 342
Vestibular nucleus complex, *in vitro* electrophysiology 335
methods 337
plasticity 342
receptor-operated channels 340
voltage-operated channels and autorhythmicity of neurons 338
Visual processing 122
Voltage-dependent currents, parasympathetic neurons 472
modulation 502
Voltage-operated channels, vestibular nucleus complex 338, 343
Vomeronasal system 276, 596

LIST OF PREVIOUS REVIEW ARTICLES

VOLUME 30

D. R. NÄSSEL	Serotonin and serotonin-immunoreactive neurons in the nervous system of insects
R. W. DYKES, P. LANDRY, T. P. HICKS, P. DIADORI and R. METHERATE	Specificity of connections in the ventroposterior nuclei of the thalamus
J. C. VENTER, U. DI PORZIO, D. A. ROBINSON, S. M. SHREEVE, J. LAI, A. R. KERLAVAGE, S. P. FRACEK JR, K.-U. LENTES and C. M. FRASER	Evolution of neurotransmitter receptor systems
B. GORDON, E. E. ALLEN and P. Q. TROMBLEY	The role of norepinephrine in plasticity of visual cortex
C. BELL	Dopamine release from sympathetic nerve terminals
M. ANNIKO, L.-E. THORNELL and R. WROBLEWSKI	Recent advances in inner ear cytochemistry—microanalytical and immunomorphological investigations
K. T. WANN and A. G. MACDONALD	Actions and interactions of high pressure and general anaesthetics
A. J. MCCOMAS, G. PRESTWICK and S. GARNER	The sick motoneurone hypothesis of muscular dystrophy
T. W. STONE and N. R. BURTON	NMDA receptors and ligands in the vertebrate CNS
E. HANSSON	Astroglia from defined brain regions as studied with primary cultures
H. SHINOZAKI	Pharmacology of the glutamate receptor
D. G. STUART, T. M. HAMM and S. VANDEN NOVEN	Partitioning of monosynaptic Ia EPSP connections with motoneurons according to neuromuscular topography: Generality and functional implications
C. D. MCCAIG	Nerve guidance: A role for bio-electric fields?
L. B. HOUGH	Cellular localization and possible functions for brain histamine: Recent progress
D. N. COOPER and C. HALL	Down's syndrome and the molecular biology of chromosome 21

VOLUME 31

K. H. REID, H. L. EDMONDS JR, A. SCHURR, M. T. TSENG and C. A. WEST	Pitfalls in the use of brain slices
N. A. SHAW	The auditory evoked potential in the rat—a review
W. LASKEY and C. POLOSA	Characteristics of the sympathetic preganglionic neuron and its synaptic input
M. DRAGUNOW	Purinergic mechanisms in epilepsy
Y. LAMOUR and J. EPELBAUM	Interactions between cholinergic and peptidergic systems in the cerebral cortex and hippocampus
T. NOGUCHI	Brain development in dwarf mice
D. G. JONES	Influence of ethanol on neuronal and synaptic maturation in the central nervous system—morphological investigations
J. P. FRAHER, G. F. KAAR, D. C. BRISTOL and J. P. ROSSITER	Development of vertical spinal motoneurone fibres: A correlative study of the growth and maturation of central and peripheral segments of large and small fibre classes
J. B. ULMER	The phosphorylation of myelin proteins
A. SIEGEL and C. B. POTT	Neural substrates of aggression and flight in the cat
H. SPITZER and S. HOCHSTEIN	Complex-cell receptive field models
Z. RAKONCZAY	Cholinesterase and its molecular forms in pathological states
J. M. PROVIS and P. L. PENFOLD	Cell death and the elimination of retinal axons during development
P. POLC	Electrophysiology of benzodiazepine receptor ligands: Multiple mechanisms and sites of action
C. R. GARDNER	Functional *in vivo* correlates of the benzodiazepine agonist-inverse agonist continuum
G. BERNROIDER	Cell-patterning during sexual neurogenesis
J. WICKENS	Electrically coupled but chemically isolated synapses: Dendritic spines and calcium in a rule for synaptic modification

VOLUME 32

H. PARNAS and L. A. SEGEL	Facilitation as a tool to study the entry of calcium and the mechanism of neurotransmitter release
T. L. TÖRÖK	Neurochemical transmission and the sodium-pump
A. SHOSAKU, Y. KAYAMA, I. SUMITOMO, M. SOGITANI and K. IWAMA	Analysis of recurrent inhibitory circuit in rat thalamus: Neurophysiology of the thalamic reticular nucleus
S. KOBAYASHI	Temperature-sensitive neurons in the hypothalamus: A new hypothesis that they act as thermostats, not as transducers
M. A. HOFMAN	On the evolution and geometry of the brain in mammals
H. MEIRI, Z. BAUM and Y. ROSENTHAL	Dynamic changes in sodium channels at demyelinated axons
R. WINKLBAUER	Development of the lateral line system in *Xenopus*
B. L. FINLAY and S. L. PALLAS	Control of cell number in the developing mammalian visual system
B. KOLB and I. Q. WHISHAW	Plasticity in the neocortex: Mechanisms underlying recovery from early brain damage
H. MATTHIES	In search of cellular mechanisms of memory
H. L. BORISON	Area postrema: Chemoreceptor circumventricular organ of the medulla oblongata
A. KIDMAN	Neurochemical and cognitive aspects of anxiety disorders
W. R. KLEMM	Drug effects on active immobility responses: What they tell us about neurotransmitter systems and motor functions
J.-P. TOUTANT	Insect acetylcholinesterase: Catalytic properties, tissue distribution and molecular forms
B. H. CHOI	The effects of methylmercury on the developing brain
R. J. HUXTABLE	Taurine in the central nervous system and the mammalian actions of taurine

VOLUME 33

M. YEADON and I. KITCHEN	Opioids and respiration
R. MILLER	Schizophrenia as a progressive disorder: Relations to EEG, CT, neuropathological and other evidence
F. L. STRAND, K. J. ROSE, J. A. KING, A. C. SEGARRA and L. A. ZUCCARELLI	ACTH modulation of nerve development and regeneration
R. D. FIELDS, J. M. LE BEAU, F. M. LONGO and M. H. ELLISMAN	Nerve regeneration through artificial tubular implants
A. NIIJIMA	Nervous regulation of metabolism
G. B. STEFANO	Role of opioid neuropeptides in immunoregulation
M. P. WITTER, H. J. GROENEWEGEN, F. H. LOPES DA SILVA and A. H. M. LOHMAN	Functional organization of the extrinsic and intrinsic circuitry of the parahippocampal region
R. H. EVANS	The pharmacology of segmental transmission in the spinal cord
A. PROCHAZKA	Sensorimotor gain control: A basic strategy of motor systems?
W. WALZ	Role of glial cells in the regulation of the brain ion microenvironment
A. ISHIDA-YAMAMOTO and M. TOHYAMA	Calcitonin gene-related peptide in the nervous tissue
T. S. LORIG	Human EEG and odor response
N. BEN-JONATHAN, L. A. ARBOGAST and J. F. HYDE	Neuroendocrine regulation of prolactin release

VOLUME 34

C. IDE, T. OSAWA and K. TOHYAMA	Nerve regeneration through allogeneic nerve grafts, with special reference to the role of the Schwann cell basal lamina
J. K. S. JANSEN and T. FLADBY	The perinatal reorganization of the innervation of skeletal muscle in mammals
J. L. WINSLOW	Analysis and numerical solution of the dendrite equation with synapses applied to cochlear neurons
Y. STERN	MPTP-induced Parkinsonism
M. SATOU	Synaptic organization, local neuronal circuitry, and functional segregation of the teleost olfactory bulb

R. MILLER, J. R. WICKENS and R. J. BENINGER	Dopamine D-1 and D-2 receptors in relation to reward and performance: a case for the D-1 receptor as a primary site of therapeutic action of neuroleptic drugs
J. M. DEL CORRAL, A. MIRALLES, M. C. NICOLAU, B. PLANAS and R. V. RIAL	Stereotaxic atlas for the lizard *Gallotia galloti*
K. KUBA and E. KUMAMOTO	Long-term potentiations in vertebrate synapses: A variety of cascades with common subprocesses
P. J. HARRISON and R. C. A. PEARSON	*In situ* hybridization histochemistry and the study of gene expression in the human brain
A. S. FENG, J. C. HALL and D. M. GOOLER	Neural basis of sound pattern recognition in anurans
W. DICKEY and J. I. MORROW	Drug-induced neurological disorders
D. COTARIU, J. L. ZAIDMAN and S. EVANS	Neurophysiological and biochemical changes evoked by valproic acid in the central nervous system
C. SUMMERS, L. M. MYERS, C. J. KALBERG and M. K. RAIZADA	Physiological and pharmacological comparisons of angiotensin II receptors in neuronal and astrocyte glial cultures
A. S. HORN	Dopamine uptake: A review of progress in the last decade
M. CHESLER	The regulation and modulation of pH in the nervous system
S. ITOH and A. TAKASHIMA	Neuropharmacological profile of V-9-M, a putative neuropeptide derived from procholecystokinin
G. I. HATTON	Emerging concepts of structure–function dynamics in adult brain: The hypothalamo–neurohypophysial system
S. NAKAMURA and T. SAKAGUCHI	Development and plasticity of the locus coeruleus: A review of recent physiological and pharmacological experimentation

VOLUME 35

M. J. TITMUS and D. S. FABER	Axotomy-induced alterations in the electrophysiological characteristics of neurons
A. M. THOMSON	Glycine is a coagonist at the NMDA receptor/channel complex
D. HERPIN	The effects of antihypertensive drugs on the cerebral blood flow and its regulation
R. FESCE	Stochastic approaches to the study of synaptic function
U. WINDHORST	Activation of Renshaw cells
K. G. HENDERSON and B. LINDVALL	Polymyositis and dermatomyositis 1990—diagnosis, treatment and prognosis
H. BENFENISTE and P. C. HUTTEMEIER	Microdialysis—theory and application
C. S. BOYAN and E. E. BALL	Neuronal organization and information processing in the wind-sensitive cercal receptor/giant interneurone system of the locust and other orthopteroid insects
M. ERECIŃSKA and I. A. SILVER	Metabolism and role of glutamate in mammalian brain
R. N. ADAMS	*In vivo* electrochemical measurements in the CNS
R. GRIFFITHS	Cysteine sulphinate (CSA) as an excitatory amino acid transmitter candidate in the mammalian central nervous system
J. M. OLCESE	The neurobiology of magnetic field detection in rodents
M. KUMADA, N. TERUI and T. KUWAKI	Arterial baroreceptor reflex: Its central and peripheral neural mechanisms
A. J. COPP, F. A. BROOK, J. P. ESTIBEIRO, A. S. W. SHUM and D. L. COCKROFT	The embryonic development of mammalian neural tube defects
W. WESEMANN and N. WEINER	Circadian rhythm of serotonin binding in rat brain
K. EZURE	Synaptic connections between medullary respiratory neurons and considerations on the genesis of respiratory rhythm
R. ANWYL	Neurophysiological actions of 5-hydroxytryptamine in the vertebrate nervous system

VOLUME 36

G. M. JONAKAIT, L. NI, P. D. WALKER and R. P. HART	Development of substance P (SP)-containing cells in the central nervous system: Consequences of neurotransmitter co-localization
A. J. SILVER and J. E. MORLEY	Role of CCK in regulation of food intake
L. SIVILOTTI and A. NISTRI	GABA receptor mechanisms in the central nervous system

W. VAN DER KLOOT	The regulation of quantal size
L. P. RENAUD and C. W. BOURQUE	Neurophysiology and neuropharmacology of hypothalamic magnocellular neurons secreting vasopressin and oxytocin
H. J. LITTLE	Mechanisms that may underlie the behavioural effects of ethanol
G. C. PAPADOPOULOS and J. G. PARNAVELAS	Monoamine systems in the cerebral cortex: Evidence for anatomical specificity
D. A. POWELL, S. L. BUCHANAN and L. L. HERNANDEZ	Classical (Pavlovian) conditioning models of age-related changes in associative learning and their neurobiological substrates
R. MILLER and R. J. BENINGER	On the interpretation of asymmetries of posture and locomotion produced with dopamine agonists in animals with unilateral depletion of striatal dopamine
S. E. FREEMAN and R. M. DAWSON	Tacrine: A pharmacological review
C. C. KING	Fractal and chaotic dynamics in nervous systems
R. HAWKES and C. GRAVEL	The modular cerebellum
R. W. GREENE and H. L. HAAS	The electrophysiology of adenosine in the mammalian central nervous system
J. W. UNGER, J. N. LIVINGSTON and A. M. MOSS	Insulin receptors in the central nervous system: Localization, signalling mechanisms and functional aspects
B. WALMSLEY	Central synaptic transmission: Studies at the connection between primary afferent fibres and dorsal spinocerebellar tract (DSCT) neurones in Clarke's column of the spinal cord
W. DICKEY	The neuroleptic malignant syndrome
R. J. HARVEY and R. M. A. NAPPER	Quantitative studies on the mammalian cerebellum
N. FALKE	Modulation of oxytocin and vasopressin release at the level of neurohypophysis
R. H. SCOTT, H. A. PEARSON and A. C. DOLPHIN	Aspects of vertebrate neuronal voltage-activated calcium currents and their regulation

VOLUME 37

E. W. LOTHMAN, E. H. BERTRAM III and J. L. STRINGER	Functional anatomy of hippocampal seizures
R. MONTEAU and G. HILAIRE	Spinal respiratory motoneurons
E. S. VIZI and E. LABOS	Non-synaptic interactions at presynaptic level
M. B. DUTIA	The muscles and joints of the neck: Their specialisation and role in head movement
D. R. NÄSSEL	Neurotransmitters and neuromodulators in the insect visual system
R. J. MILLER	The control of neuronal Ca^{2+} homeostasis
S. KATO, K. NEGISHI, T. TERANISHI and S. ISHITA	The use of the carp retina in neurobiology: Its uniqueness and application for neural network analyses of the inner retina
M. L. LANNOO, L. ROSS, L. MALER and R. HAWKES	Development of the cerebellum and its extracellular Purkinje cell projection in teleost fishes as determined by Zebrin II immuno-cytochemistry
G. E. DUNCAN and W. E. STUMPF	Brain activity patterns: Assessment by high resolution autoradiographic imaging of radiolabeled 2-deoxyglucose and glucose uptake
S. HAMPSON	Generalization and specialization in artificial neural networks
J.-P. ROYET	Stereology: A method for analyzing images
N. J. WOOLF	Cholinergic systems in mammalian brain and spinal cord
D. E. OORSCHOT, D. A. PETERSON and D. G. JONES	Neurite growth from, and neuronal survival within, cultured explants of the nervous system: A critical review of morphometric and stereological methods, and suggestions for the future

VOLUME 38

P. LEGENDRE and D. A. POULAIN	Intrinsic mechanisms involved in the electrophysiological properties of the vasopressin-releasing neurons of the hypothalamus
M. SCUKA and J. W. MOZRZYMAS	Postsynaptic potentiation and desensitization at the vertebrate end-plate receptors
J. MASSION	Movement, posture and equilibrium: Interaction and coordination

S. BERNATH	Calcium-independent release of amino acid neurotransmitters: Fact or artifact?
N. OKADO, H. SAKO, S. HOMMA and K. ISHIKAWA	Development of serotoninergic system in the brain and spinal cord of the chick
Y. DUMONT, J.-C. MARTEL, A. FOURNIER, S. ST-PIERRE and R. QUIRION	Neuropeptide Y and neuropeptide Y receptor subtypes in brain and peripheral tissues
B. B. STANFIELD	The development of the corticospinal projection
M. INOUE and M. YOSHII	Modulation of ion channels by somatostatin and acetylcholine
M. HAYASHI	Ontogeny of some neuropeptides in the primate brain
J. P. FRAHER	The CNS–PNS transitional zone of the rat. Morphometric studies at cranial and spinal levels
T. TANAKA, S. TANAKA, T. FUJITA, K. TAKANO, H. FUKUDA, K. SAKO and Y. YONEMASU	Experimental complex partial seizures induced by a microinjection of kainic acid into limbic structures
E. JANKOWSKA	Interneuronal relay in spinal pathways from proprioceptors
M. D. MAJEWSKA	Neurosteroids: Endogenous bimodal modulators of the $GABA_A$ receptor mechanism of action and physiological significance
R.-D. TREEDE, R. A. MEYER, S. N. RAJA and J. N. CAMPBELL	Peripheral and central mechanisms of cutaneous hyperalgesia
R. S. COHEN and D. W. PFAFF	Ventromedial hypothalamic neurons in the mediation of long-lasting effects of estrogen on lordosis behavior
P. SARANSAARI and S. S. OJA	Release of GABA and taurine from brain slices
K. ANDÓ	Cerebrovascular innervation of small bats
M. WOLMAN	Patterns of spread of different demyelinating processes in the myelin sheath
Y. TAKAHASHI	Gene expression in cells of the central nervous system
L. A. MARCO and R. S. JOSHI	A ketamine-induced rat model of tardive dyskinesia
C. P. LEBEL and S. C. BONDY	Oxidative damage and cerebral aging
K. WICTORIN	Anatomy and connectivity of intrastriatal striatal transplants

VOLUME 39

I. FERRER, E. SORIANO, J. A. DEL RIO, S. ALCANTARA and C. AULADELL	Cell death and removal in the cerebral cortex during development
K. V. BAEV and Y. P. SHIMANSKY	Principles of organization of neural systems controlling automatic movements in animals
J. M. BARNES and J. M. HENLEY	Molecular characteristics of excitatory amino acid receptors
J. C. SZERB and R. F. BUTTERWORTH	Effect of ammonium ions on synaptic transmission in the mammalian central nervous system
J. W. MILLER	The role of mesencephalic and thalamic arousal systems in experimental seizures
E. SIMON, R. GERSTBERGER and D. A. GRAY	Central nervous angiotensin II responsiveness in birds
T. TSUMOTO	Long-term potentiation and long-term depression in the neocortex
Y. KURACHI, R. T. TUNG, H. ITO and T. NAKAJIMA	G protein activation of cardiac muscarinic K+ channels
J. R. BLACKBURN, J. G. PFAUS and A. G. PHILLIPS	Dopamine functions in appetitive and defensive behaviours
J. PUYMIRAT	Thyroid receptors in the rat brain
C. F. ZORUMSKI and L. L. THIO	Properties of vertebrate glutamate receptors: Calcium mobilization and desensitization
D. A. MCCORMICK	Neurotransmitter actions in the thalamus and cerebral cortex and their role in neuromodulation of thalamocortical activity
M. KOSSUT	Plasticity of the barrel cortex neurons
J. S. KING, S. L. CUMMINGS and G. A. BISHOP	Peptides in cerebellar circuits
T. GOTOW	The cytoplasmic structure of the axon terminal
G. A. BISHOP and C. W. KERR	The physiological effects of peptides and serotonin on purkinje cell activity

W. VAN DER KLOOT	The regulation of quantal size
L. P. RENAUD and C. W. BOURQUE	Neurophysiology and neuropharmacology of hypothalamic magnocellular neurons secreting vasopressin and oxytocin
H. J. LITTLE	Mechanisms that may underlie the behavioural effects of ethanol
G. C. PAPADOPOULOS and J. G. PARNAVELAS	Monoamine systems in the cerebral cortex: Evidence for anatomical specificity
D. A. POWELL, S. L. BUCHANAN and L. L. HERNANDEZ	Classical (Pavlovian) conditioning models of age-related changes in associative learning and their neurobiological substrates
R. MILLER and R. J. BENINGER	On the interpretation of asymmetries of posture and locomotion produced with dopamine agonists in animals with unilateral depletion of striatal dopamine
S. E. FREEMAN and R. M. DAWSON	Tacrine: A pharmacological review
C. C. KING	Fractal and chaotic dynamics in nervous systems
R. HAWKES and C. GRAVEL	The modular cerebellum
R. W. GREENE and H. L. HAAS	The electrophysiology of adenosine in the mammalian central nervous system
J. W. UNGER, J. N. LIVINGSTON and A. M. MOSS	Insulin receptors in the central nervous system: Localization, signalling mechanisms and functional aspects
B. WALMSLEY	Central synaptic transmission: Studies at the connection between primary afferent fibres and dorsal spinocerebellar tract (DSCT) neurones in Clarke's column of the spinal cord
W. DICKEY	The neuroleptic malignant syndrome
R. J. HARVEY and R. M. A. NAPPER	Quantitative studies on the mammalian cerebellum
N. FALKE	Modulation of oxytocin and vasopressin release at the level of neurohypophysis
R. H. SCOTT, H. A. PEARSON and A. C. DOLPHIN	Aspects of vertebrate neuronal voltage-activated calcium currents and their regulation

VOLUME 37

E. W. LOTHMAN, E. H. BERTRAM III and J. L. STRINGER	Functional anatomy of hippocampal seizures
R. MONTEAU and G. HILAIRE	Spinal respiratory motoneurons
E. S. VIZI and E. LABOS	Non-synaptic interactions at presynaptic level
M. B. DUTIA	The muscles and joints of the neck: Their specialisation and role in head movement
D. R. NÄSSEL	Neurotransmitters and neuromodulators in the insect visual system
R. J. MILLER	The control of neuronal Ca^{2+} homeostasis
S. KATO, K. NEGISHI, T. TERANISHI and S. ISHITA	The use of the carp retina in neurobiology: Its uniqueness and application for neural network analyses of the inner retina
M. L. LANNOO, L. ROSS, L. MALER and R. HAWKES	Development of the cerebellum and its extracellular Purkinje cell projection in teleost fishes as determined by Zebrin II immuno-cytochemistry
G. E. DUNCAN and W. E. STUMPF	Brain activity patterns: Assessment by high resolution autoradiographic imaging of radiolabeled 2-deoxyglucose and glucose uptake
S. HAMPSON	Generalization and specialization in artificial neural networks
J.-P. ROYET	Stereology: A method for analyzing images
N. J. WOOLF	Cholinergic systems in mammalian brain and spinal cord
D. E. OORSCHOT, D. A. PETERSON and D. G. JONES	Neurite growth from, and neuronal survival within, cultured explants of the nervous system: A critical review of morphometric and stereological methods, and suggestions for the future

VOLUME 38

P. LEGENDRE and D. A. POULAIN	Intrinsic mechanisms involved in the electrophysiological properties of the vasopressin-releasing neurons of the hypothalamus
M. SCUKA and J. W. MOZRZYMAS	Postsynaptic potentiation and desensitization at the vertebrate end-plate receptors
J. MASSION	Movement, posture and equilibrium: Interaction and coordination

S. BERNATH	Calcium-independent release of amino acid neurotransmitters: Fact or artifact?
N. OKADO, H. SAKO, S. HOMMA and K. ISHIKAWA	Development of serotoninergic system in the brain and spinal cord of the chick
Y. DUMONT, J.-C. MARTEL, A. FOURNIER, S. ST-PIERRE and R. QUIRION	Neuropeptide Y and neuropeptide Y receptor subtypes in brain and peripheral tissues
B. B. STANFIELD	The development of the corticospinal projection
M. INOUE and M. YOSHII	Modulation of ion channels by somatostatin and acetylcholine
M. HAYASHI	Ontogeny of some neuropeptides in the primate brain
J. P. FRAHER	The CNS–PNS transitional zone of the rat. Morphometric studies at cranial and spinal levels
T. TANAKA, S. TANAKA, T. FUJITA, K. TAKANO, H. FUKUDA, K. SAKO and Y. YONEMASU	Experimental complex partial seizures induced by a microinjection of kainic acid into limbic structures
E. JANKOWSKA	Interneuronal relay in spinal pathways from proprioceptors
M. D. MAJEWSKA	Neurosteroids: Endogenous bimodal modulators of the $GABA_A$ receptor mechanism of action and physiological significance
R.-D. TREEDE, R. A. MEYER, S. N. RAJA and J. N. CAMPBELL	Peripheral and central mechanisms of cutaneous hyperalgesia
R. S. COHEN and D. W. PFAFF	Ventromedial hypothalamic neurons in the mediation of long-lasting effects of estrogen on lordosis behavior
P. SARANSAARI and S. S. OJA	Release of GABA and taurine from brain slices
K. ANDÓ	Cerebrovascular innervation of small bats
M. WOLMAN	Patterns of spread of different demyelinating processes in the myelin sheath
Y. TAKAHASHI	Gene expression in cells of the central nervous system
L. A. MARCO and R. S. JOSHI	A ketamine-induced rat model of tardive dyskinesia
C. P. LEBEL and S. C. BONDY	Oxidative damage and cerebral aging
K. WICTORIN	Anatomy and connectivity of intrastriatal striatal transplants

VOLUME 39

I. FERRER, E. SORIANO, J. A. DEL RIO, S. ALCANTARA and C. AULADELL	Cell death and removal in the cerebral cortex during development
K. V. BAEV and Y. P. SHIMANSKY	Principles of organization of neural systems controlling automatic movements in animals
J. M. BARNES and J. M. HENLEY	Molecular characteristics of excitatory amino acid receptors
J. C. SZERB and R. F. BUTTERWORTH	Effect of ammonium ions on synaptic transmission in the mammalian central nervous system
J. W. MILLER	The role of mesencephalic and thalamic arousal systems in experimental seizures
E. SIMON, R. GERSTBERGER and D. A. GRAY	Central nervous angiotensin II responsiveness in birds
T. TSUMOTO	Long-term potentiation and long-term depression in the neocortex
Y. KURACHI, R. T. TUNG, H. ITO and T. NAKAJIMA	G protein activation of cardiac muscarinic K+ channels
J. R. BLACKBURN, J. G. PFAUS and A. G. PHILLIPS	Dopamine functions in appetitive and defensive behaviours
J. PUYMIRAT	Thyroid receptors in the rat brain
C. F. ZORUMSKI and L. L. THIO	Properties of vertebrate glutamate receptors: Calcium mobilization and desensitization
D. A. MCCORMICK	Neurotransmitter actions in the thalamus and cerebral cortex and their role in neuromodulation of thalamocortical activity
M. KOSSUT	Plasticity of the barrel cortex neurons
J. S. KING, S. L. CUMMINGS and G. A. BISHOP	Peptides in cerebellar circuits
T. GOTOW	The cytoplasmic structure of the axon terminal
G. A. BISHOP and C. W. KERR	The physiological effects of peptides and serotonin on purkinje cell activity

P. A. FUCHS — Ionic currents in cochlear hair cells
G. D. ROSEN, G. F. SHERMAN and A. M. GALABURDA — Biological substrates of anatomic asymmetry
P. T. FRANCIS, M. N. PANGALOS and D. M. BOWEN — Animal and drug modelling for Alzheimer synaptic pathology
G. VAN DEN BERGHE, F. BONTEMPS, M. F. VINCENT and F. VAN DEN BERGH — The purine nucleotide cycle and its molecular defects
J. DEFELIPE and I. FARINAS — The pyramidal neuron of the cerebral cortex: Morphological and chemical characteristics of the synaptic inputs
K. FUKUSHIMA, C. R. S. KANEKO and A. F. FUCHS — The neuronal substrate of integration in the oculomotor system

VOLUME 40

C. R. GARDNER, W. R. TULLY and C. J. R. HEDGECOCK — The rapidly expanding range of neuronal benzodiazepine receptor ligands
C. BUISSERET-DELMAS and P. ANGAUT — The cerebellar olivo-corticonuclear connections in the rat
H. MEIRI, E. BANIN, M. ROLL and A. ROUSSEAU — Toxic effects of aluminium on nerve cells and synaptic transmission
P. I. PAKHOTIN, I. D. PAKHOTINA and A. B. BELOUSOV — The study of brain slices from hibernating mammals *in vitro* and some approaches to the analysis of hibernation problems *in vivo*
A NEHLIG and A. PEREIRA DE VASCONCELOS — Glucose and ketone body utilization by the brain of neonatal rats
B. B. RUZICKA and K. H. JHAMANDAS — Excitatory amino acid action on the release of brain neurotransmitters and neuromodulations: Biochemical studies
R. LENT and S. L. SCHMIDT — The ontogenesis of the forebrain commissures and the determination of brain asymmetrics
G. G. HADDAD and C. JIANG — O_2 deprivation in the central nervous system: On mechanisms of neuronal response, differential sensitivity and injury
C. HILDEBRAND, S. REMAHL, H. PERSSON and C. BJARIMAR — Myelinated nerve fibres in the CNS
M. TAKATA — Two types of inhibitory postsynaptic potentials in the hypoglossal motoneurons
E. J. WARRANT and P. D. MCINTYRE — Arthropod eye design and the physical limits to spatial resolving power
G. NISTICÒ — Communications among central nervous system, neuroendocrine and immune systems: Interleukin-2
E. HÖSLI and L. HÖSLI — Receptors for neurotransmitters on astrocytes in the mammalian central nervous system
J. S. HONG, J. F. MCGINTYL, P. H. K. LEE, C. W. XIE and C. L. MITCHELL — Relationship between hippocampal opioid peptides and seizures
S. MIHARA — Intracellular recordings from neurons of the submucous plexus
M. H. WHITNALL — Regulation of the hypothalamic corticotropin-releasing hormone neurosecretory system
T. A. LOVICK — Integrated activity of cardiovascular and pain regulatory systems: Role in adaptive behavioural responses
H. HARA, T. SUKAMOTO and K. KOGURE — Mechanism and pathogenesis of ischemia-induced neuronal damage
N. LINDEFORS, A. LINDÉN, S. BRENÉ, G. SENDVALL and H. PERSSON — CCK peptides and mRNA in the human brain
A. PERTOVAARA — Antinuciception induced by alpha-2-adrenoceptor agonists, with special emphasis on medefomidine studies
I. MERCHENTHALER, F. J. LÓPEZ and A. NEGRO-VILAR — Anatomy and physiology of central galanin-containing pathways

VOLUME 41

P. BALABAN — Behavioural neurobiology of learning in terrestrial snails
M. TAKANO and A. NOMA — The ATP-sensitive K^+ channel
J. MASSOULIE, L. PEZZEMENTI, S. BON, E. KREJCI and F.-M. VALLETTES — Molecular and cellular biology of cholinesterases

R. NAVARRETE and G. VRBOVA	Activity-dependent interactions between motoneurons and muscles: Their role in the development of the motor unit
M. W. SALTER, Y. DE KONINCK and J. L. HENRY	Physiological roles for adenosine and ATP in synaptic transmission in the spinal dorsal horn
B. H. BLAND and L. V. COLOM	Extrinsic and intrinsic properties underlying oscillation and synchrony in limbic cortex
J. D. COOPER and O. T. PHILLIPSON	Central neuroanatomical organisation of the rat visuomotor system
C. H. HORNER	Plasticity of the dendritic spine
H. M. SINNAMON	Preoptic and hypothalamic neurons and the initiation of locomotion in the anesthetized rat
L. AITKIN and V. PARK	Audition and the auditory pathway of a vocal new world primate, the common marmoset
R. E. DUSTMAN, D. E. SHEARER and R. Y. EMMERSON	EEG and event-related potentials in normal aging
B. J. DENNIS and S. T. MELLER	Investigations on the periaqueductal gray (PAG) of the rabbit: With consideration of experimental procedures and functional roles of the PAG
G. R. BARNES	Visual–vestibular interaction in the control of head and eye movement: The role of visual feedback and predictive mechanisms
L. H. LAZARUS and M. ATTILA	The toad, ugly and venomous, wears yet a precious jewel in his skin
R. L. PAPKE	The kinetic properties of neuronal nicotinic receptors: Genetic basis of functional diversity
M. S. ALDRICH	The neurobiology of narcolepsy–cataplexy
K. TOYAMA, Y. KOMATSU, N. YAMAMOTO and T. KUROTANI	*In vitro* studies of visual cortical development and plasticity
C. A. PORRO and M. CAVAZZUTI	Spatial and temporal aspects of spinal cord and brainstem activation in the formalin pain model
A. J. TODD and R. C. SPIKE	The localization of classical transmitters and neuropeptides within neurons in laminae I–III of the mammalian spinal dorsal horn
V. REGHUNANDANAN, R. REGHUNANDANAN and P. I. SINGH	Neurotransmitters of the suprachiasmatic nucleus: Role in the regulation of circadian rhythms
G. S. BOYAN and E. E. BALL	The grasshopper, *Drosophila* and neuronal homology (advantages of the insect nervous system for the neuroscientist)
M. SENSENBRENNER	The neurotrophic activity of fibroblast growth factors
U. PROSKE, D. L. MORGAN and J. E. GREGORY	Thixotropy in skeletal muscle and in muscle spindles: A review
J. HERBERT	Peptides in the limbic system: Neurochemical codes for co-ordinated adaptive responses to behavioural and physiological demand

VOLUME 42

G. SPERK	Kainic acid seizures in the rat
A. DEPAULIS, M. VERGNES and C. MARESCAUX	Endogenous control of epilepsy: The nigral inhibitory system
K. KITAHAMA, T. MAEDA, R. M. DENNEY and M. JOUVET	Monoamine oxidase: Distribution in the cat brain studied by enzyme- and immunohistochemistry: Recent progress
J. BELL, S. BOLANOWSKI and M. H. HOLMES	The structure and function of pacinian corpuscles: A review
S. R. VINCENT	Nitric oxide; a radical neurotransmitter in the central nervous system
E. SCHERINI and G. BERNOCCHI	*Cis*DDP treatment and development of the rat cerebellum
R. A. L. DAMPNEY	The subretrofacial vasomotor nucleus: Anatomical, chemical and pharmacological properties and role in cardiovascular regulation
S. HAMPSON	Problem solving in artificial neural networks
GUEST EDITOR: R. W. DAVIES	Life and death in the nervous system (The Robertson Symposium)
E. HAFEN, B. DICKSON, D. BRUNNER and T. RAABE	Genetic dissection of signal transduction mediated by the sevenless receptor tyrosine kinase in *Drosophila*
F. HUANG, C. DAMBLY-CHAUDIÈRE and A. GHYSEN	Position-reading and the emergence of sense organ precursors in *Drosophila*

J. W. SENTRY, S. F. GOODWIN, C. D. MILLIGAN, A. DUNCANSON, M. YANG and K. KAISER	Reverse genetics of *Drosophila* brain structure and function
A. JOLIOT, I. LE ROUX, M. VOLOVITCH, E. BLOCH-GALLEGO and A. PROCHIANTZ	Neurotrophic activity of a homeobox peptide
H. JOCKUSCH, K. KAUPMANN, M. GRONEMEIER, M. SCHLEEF and R. KLOCKE	Exploring the mammalian neuromuscular system by analysis of mutations: Spinal muscular atrophy and mytonia
R. W. DAVIES, E. J. GALLAGHER and A. SAVIOZ	Reverse genetics of the mouse central nervous system: Targeted genetic analysis of neuropeptide function and reverse genetic screens for genes involved in human neurodegenerative disease
S. BLACKSHAW	Cellular and molecular approaches to neural repair in the medicinal leech
S. KORNEEV, S. BLACKSHAW and J. A. DAVIES	cDNA libraries from a few neural cells
G. DECHANT, A. RODRÍGUEZ-TÉBAR and Y.-A. BARDE	Neurotrophin receptors
R. SCHOEPFER, H. MONYER, B. SOMMER, W. WISDEN, R. SPRENGEL, T. KUNER, H. LOMELI, A. HERB, M. KÖHLER, N. BURNASHEV, W. GÜNTHER, P. RUPPERSBERG and P. SEEBURG	Molecular biology of glutamate receptors
U. LÖNNENDONKER	Use dependence of guanidinium toxins in frog myelinated nerve: Evidence for features of native voltage-gated sodium channels
M. D. BERRY, A. V. JUORIO and I A. PATERSON	The functional role of monoamine oxidases A and B in the mammalian central nervous system
T. G. SMART, X. XIE and B. J. KRISHEK	Modulation of inhibitory and excitatory amino acid receptor ion channels by zinc
J. W. PHILLIS	A "radical" view of cerebral ischemic injury
K. P. ABLE	Magnetic orientation and magnetoreception in birds
G. B. STEFANO, T. V. BILFINGER and G. L. FRICCHIONE	The immune-neuro-link and the macrophage: Postcardiotomy delirium, HIV-associated dementia and psychiatry
K. KAILA	Ionic basis of $GABA_A$, receptor channel function in the nervous system
M. VERHAGE, W. E. J. M. GHIJSEN and F. H. LOPES DA SILVA	Presynaptic plasticity: The regulation of Ca^{2+}-dependent transmitter release
S. M. THOMPSON	Modulation of inhibitory synaptic transmission in the hippocampus
J. R. ELLIOTT and A. A. ELLIOTT	The effects of alcohols and other surface-active compounds on neuronal sodium channels
K. ONODERA, A. YAMATODANI, T. WATANABE and H. WADA	Neuropharmacology of the histaminergic neuron system in the brain and its relationship with behavioral disorders
K. IKEDA, H. SUNOSE and T. TAKASAKA	Ion transport mechanisms in the outer hair cell of the mammalian cochlea
C. M. A. PENNARTZ, H. J. GROENEWEGEN and F. H. LOPES DA SILVA	The nucleus accumbens as a complex of functionally distinct neuronal ensembles: An integration of behavioural, electrophysiological and anatomical data

VOLUME 43

M. JOËLS and E. R. DE KLOET	Mineralocorticoid and glucocorticoid receptors in the brain. Implications for ion permeability and transmitter systems
M. ERECIŃSKA and I. A. SILVER	Ions and energy in mammalian brain
N. AKAIKE and S. UENO	Proton-induced current in neuronal cells
C. HILDEBRAND, C. M. BOWE and I. N. REMAHL	Myelination and myelin sheath remodelling in normal and pathological PNS nerve fibres
N. J. SCOLDING, J. P. ZAJICEK, N. WOOD and D. A. S. COMPSTON	The pathogenesis of demyelinating disease
H. MEVES	Modulation of ion channels by arachidonic acid
P. J. EVANS, R. MIDHA and S. E. MACKINNON	The peripheral nerve allograft: A comprehensive review of regeneration and neuroimmunology
K. C. WADHWANI and S. I. RAPOPORT	Transport properties of vertebrate blood–nerve barrier: Comparison with blood–brain barrier

S. E. DRYER	Functional development of the parasympathetic neurons of the avian ciliary ganglion: A classic model system for the study of neuronal differentiation and development
R. W. BANKS	The motor innervation of mammalian muscle spindles
J. SIRVIÖ, P. RIEKKINEN, JR, P. JÄKÄLÄ and P. J. RIEKKINEN	Experimental studies on the role of serotonin in cognition
G. H. HENRY, A. MICHALSKI, B. M. WIMBORNE and R. J. MCCART	The nature and origin of orientation specificity in neurons of the visual pathways
P. A. SMITH	Amphibian sympathetic ganglia: An owner's and operator's manual
C. K. DAMER and C. E. CREUTZ	Secretory and synaptic vesicle membrane proteins and their possible roles in regulated exocytosis
G. V. REBEC and R. C. PIERCE	A vitamin as neuromodulator: Ascorbate release into the extracellular fluid of the brain regulates dopaminergic and glutamatergic transmission
H.-J. HÄBLER, W. JÄNIG and M. MICHAELIS	Respiratory modulation in the activity of sympathetic neurones

VOLUME 44

J.-P. HERMAN and N. D. ABROUS	Dopaminergic neural grafts after fifteen years: Results and perspectives
W. W. BLESSING, Z.-Q. DING, Y.-W. LI, Z. J. GIEROBA, A. J. WILSON, P. G. HALLSWORTH and S. L. WESSELINGH	Transneuronal labelling of CNS neurons with herpes simplex virus
S. S. SMITH	Female sex steroid hormones: From receptors to networks to performance—actions on the sensorimotor system
R. A. KAUPPINEN and S. R. WILLIAMS	Nuclear magnetic resonance spectroscopy studies of the brain
I. S. MCLENNAN	Neurogenic and myogenic regulation of skeletal muscle formation: A critical re-evaluation
M. D. BERRY, A. V. JUORIO and I. A. PATTERSON	Possible mechanisms of action of (−)deprenyl and other MAO-B inhibitors in some neurologic and psychiatric disorders
R. KÖTTER	Postsynaptic integration of glutamatergic and dopaminergic signals in the striatum
M.-K. SUN and D. J. REIS	Central neural mechanisms mediating excitation of sympathetic neurons by hypoxia
R. M. RIDLEY	The psychology of perseverative and stereotyped behaviour
D. E. OORSCHOT	Are you using neuronal densities, synaptic densities or neurochemical densities as your definitive data? There is a better way to go
H. YAGINUMA, T. SHIGA and R. W. OPPENHEIM	Early developmental patterns and mechanisms of axonal guidance of spinal interneurons in the chick embryo spinal cord
L. M. GARCÍA-SEGURA, J. A. CHOWEN, A. PÁRDUCZ and F. NAFTOLIN	Gonadal hormones as promoters of structural synaptic plasticity: Cellular mechanisms
T. J. COLLIER and J. E. SPRINGER	Neural graft augmentation through co-grafting: Implantation of cells as sources of survival and growth factors
E. M. LIEBERMAN, P. T. HARGITTAI and R. M. GROSSFELD	Electrophysiological and metabolic interactions between axons and glia in crayfish and squid
N. C. DANBOLT	The high affinity uptake system for excitatory amino acids in the brain
B. SCHÖBITZ, E. R. DE KLOET and F. HOLSBOER	Gene expression and function of interleukin 1, interleukin 6 and tumor necrosis factor in the brain
J. H. BENINGTON and H. C. HELLER	Does the function of REM sleep concern non-REM sleep or waking?
G. BONANNO and M. RAITERI	Release-regulating presynaptic heterocarriers
A. R. GREEN and A. J. CROSS	The neuroprotective actions of chlormethiazole
Y. SHEN, S. M. SPECHT, I. DE SAINT GHISLAIN and R. LI	The hippocampus: A biological model for studying learning and memory
K. D. BECK	Functions of brain-derived neurotrophic factor, insulin-like growth factor-I and basic fibroblast growth factor in the development and maintenance of dopaminergic neurons
M. J. AZANZA and A. DEL MORAL	Cell membrane biochemistry and neurobiological approach to biomagnetism